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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,970	04/06/2001	Alasdair Rawsthorne		5419

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EXAMINER

PHAN, THAI Q

ART UNIT PAPER NUMBER

2128

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/827,970	Applicant(s) RAWSTHORNE ET AL.	
	Examiner Thai Q. Phan	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/23/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to patent application S/N: 09/827,970, filed on 04/06/2001. Claims 1-15 are pending in this Action.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in United Kingdom on 04/27/1999. It is noted, however, that applicant has not filed a certified copy of the United Kingdom application as required by 35 U.S.C. 119(b).

Drawings

Figure 4 of the drawings is objected to as failing to comply with 37 CFR 1.84(o) because they do not include the following functional labels or legends related to reference sign(s) mentioned in the description. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 14 recite the limitation "the content of ... locations" in step (b).

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al, US patent no. 6,199,152 B1 in views of Souloglou et al, US patent application publication nos. 2003/0159134 A1, 2004/0205733 A1, and 2004/0210880 A1.

As per claim 1, Kelly discloses a method and system for processing and protecting memory for a computer processor during normal and emulation operation with feature limitations very similar to the claimed invention. According to Kelly, the memory processing method includes steps

Mapping target register representing a working register of a subject machine for emulation to either a first location or to a second location within a target machine (col. 15, lines 26-46, col. 16, lines 20-40, col. 23, line 1-11, col. 32, lines 40-64, for example),

Alternating mapping of the working register between the first and second locations for code translation/conversion for target emulation, such that the first or second locations represents a definitive content of the working registers for use by the emulator during exception handling, whilst the other of the first or second locations represents a speculative version of the abstract register (col. 20, lines 39-57, col. 21, lines 23-30, cols. 28-38). Kelly does not expressly disclose "an abstract register" as claimed. Such claimed feature is however well-known in the art. In fact, Souloglou teaches a plurality of abstract register used for code conversion and for dynamic binary translation in emulation, binary code translation and code optimization for target emulation in Kelly emulation system above, for example.

This would motivate practitioner in the art at the time of the invention was made to combine or use the abstract registers as taught in Souloglou above into the emulation system for handling exception in code conversion or translation during target program emulation.

As per claim 2, Souloglou discloses for a predetermined section or set of instruction codes, locations holding a content or a definitive value of the abstract register, while the other of locations holds a speculative for handling exception during code conversion or emulation as claimed.

As per claim 3, Kelly and Souloglou disclose code conversion including the limitations as claimed for target emulation.

As per claim 4, Kelly discloses register mapping for predetermined section of subject code as claimed (col. 13, lines 39-61, col. 16, lines 20-40, for example).

As per claim 5, Souloglou teaches a plurality of abstract registers for selected target locations as above.

As per claims 6-8, Kelly discloses the claimed limitation during code translation for handling code exception.

As per claim 9, Kelly discloses a method for use in handling exceptions by an emulator performing program code conversion between subject code suitable for a first type (subject) processor and target code suitable for a target processor with feature limitations very similar to the claimed invention. According to Kelly, the method for code conversion in the target emulation includes steps

Providing a plurality of registers of the first type processor (Fig. 4),

Mapping target register representing a working register of a subject machine for emulation to either a first location or to a second location within a target machine (col. 15, lines 26-46, col. 16, lines 20-40, col. 23, line 1-11, col. 32, lines 40-64, for example),

Alternating mapping of the working register between the first and second locations (pair of locations) for code translation/conversion in target emulation, such that one of the first or second locations represents a definitive version or content of the working registers for use by the emulator during exception handling, whilst the other of the first or second locations represents a speculative version of the abstract register

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(col. 20, lines 39-57, col. 21, lines 23-30, cols. 28-38). Kelly does not expressly disclose "an abstract register" as claimed for binary translation as in the present disclosed context. Such claimed feature is however well-known in the art. In fact, Souloglou teaches a plurality of abstract register used for code conversion in emulation, binary code translation and code optimization for code compilation during target emulation as in Kelly emulation system above, for example.

This would motivate practitioner in the art at the time of the invention was made to combine or use the abstract registers as taught in Souloglou above into the emulation system for handling exception in code conversion or translation during target program emulation.

As per claim 10, Souloglou discloses for a predetermined section or set of instruction codes, locations holding a content or a definitive value of the abstract register, while the other of locations holds a speculative for handling exception during code conversion or emulation, and the mapping is performed upon reaching the end of the predetermined subject code as claimed.

As per claim 11, Kelly and Souloglou disclose code conversion including the limitations as claimed for target emulation.

As per claims 12-13 and 14-15, Kelly discloses an emulator and computer program product for use in handling exceptions by an emulator performing program code conversion between subject code suitable for a first type (subject) processor and target code suitable for a target processor with feature limitations very similar to the

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claimed invention. According to Kelly, the emulator with program product includes means for performing steps

Providing a plurality of registers of the first type processor (Fig. 4),

Mapping target register representing a working register of a subject machine for emulation to either a first location or to a second location within a target machine (col. 15, lines 26-46, col. 16, lines 20-40, col. 23, line 1-11, col. 32, lines 40-64, for example),

Alternating mapping of the working register between the first and second locations (pair of locations) for code translation/conversion in target emulation, such that one of the first or second locations represents a definitive version or content of the working registers for use by the emulator during exception handling, whilst the other of the first or second locations represents a speculative version of the abstract register (col. 20, lines 39-57, col. 21, lines 23-30, cols. 28-38) for a predetermined subject code as claimed. Kelly does not expressly disclose "an abstract register" as claimed for binary translation as in the present disclosed context. Such claimed feature is however well-known in the art. In fact, Souloglou teaches a plurality of abstract register used for code conversion in emulation, binary code translation and code optimization for code compilation during target emulation as in Kelly emulation system above, for example.

This would motivate practitioner in the art at the time of the invention was made to combine or use the abstract registers as taught in Souloglou above into the emulation system for handling exception in code conversion or translation during target program emulation.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent 5,280,592, issued to Ryba et al, on Jan. 1994
2. US patent no. 5,974,440, issued to Brooks et al, on Oct. 1999
3. US patent application publication no. US 2003/0126588 A1, issued to Souloglou et al, on July 2003
3. US patent application publication no. US 2003/0159134 A1, to Souloglou et al, on Aug. 2003
4. US patent application publication no. US 2004/0210880 A1, to Souloglou et al, on Oct. 2004
5. US patent application publication no. US 2004/0205733 A1, issued to Souloglou et al, on Oct. 2004
2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Q. Phan whose telephone number is 571-272-3783.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached on 571-272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dec. 07, 2004



Thai Phan
Primary Examiner
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